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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HANS PETER RATH

Appeal 2008-6315
Application 09/701,587
Technology Center 1700

Decided:¹ February 19, 2009

Before EDWARD C. KIMLIN, CHARLES F. WARREN, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 12, 14-17, and 21-35, all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

I. BACKGROUND

The invention relates to polyisobutene and a process for preparing polyisobutene having a terminal vinylidene group content of more than 80 mol % and a number average molecular weight of from 500 to 5000 dalton. The process comprises polymerizing isobutene in the presence of a complex comprising boron trifluoride, a primary or a secondary alcohol, and an ether containing no tertiary alkyl groups. Claim 12 is illustrative of the subject matter on appeal:

12. A process for preparing highly reactive polyisobutenes having a terminal vinylidene group content of more than 80 mol % and a number average molecular weight of from 500 to 5000 dalton by cationic polymerization of isobutene in the liquid phase in the presence of a complex comprising boron trifluoride at from +40° to -60°C, which comprises polymerizing isobutene in the presence of a complex comprising boron trifluoride and

a) a primary alcohol having 1-20 carbon atoms or a secondary alcohol having 3-20 carbon atoms, or a mixture of these alcohols, and

b) an ether containing no tertiary alkyl groups and having the formula I



wherein R¹ is a secondary alkyl group having 3-10 carbon atoms, and R² is methyl, ethyl, or a primary or secondary alkyl group having 3-10 carbon atoms,

wherein the alcohol (a) and the ether (b) have a molar ratio of from 0.01:1 to 1:1, and wherein the molar ratio of the sum of alcohol (a) and ether (b) to boron trifluoride is from 1.4:1 to 2:1.

Claims 12, 14-17, and 21-35 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Rath, U.S. Patent No. 5,408,018, issued April 18, 1995.

We have thoroughly reviewed each of Appellant's arguments for patentability.² However, we are in complete agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejections.

The issue presented is: Did Appellant identify reversible error in the Examiner's rejection of claims 12, 14-17, and 21-35 under § 103? We answer this question in the negative.

A claimed invention is unpatentable if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103. "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1739 (2007). The question to be asked is "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.*

² Appellant's arguments (and, therefore, our analysis) focus on independent claim 12. Appellant has not provided separate arguments addressing the remaining claims.

“[I]n a section 103 inquiry, the fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered.” *Merck & Co. Inc. v. Biocraft Labs. Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (*quoting In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)).

The Examiner found that Rath describes a process for preparing polyisobutene with a content of terminal vinylidene groups of more than 80 mol % and average molecular weight of 500-5000 by polymerizing isobutene in the presence of a complex comprising boron trifluoride, secondary alcohol, and dialkyl ether. (Ans. 3; Rath, col.4, ll. 44-57). The Examiner found that Rath describes that the dialkyl ethers can be symmetrical and unsymmetrical C₂-C₂₀ dialkyl ethers (Ans. 3; Rath, col. 7, ll. 61-65). The Examiner found that Rath exemplified the preparation of polyisobutene having a terminal vinylidene group content of more than 80 mol%. (Ans. 3-4; Rath, col. 10, ll. 7-22, examples 6-8). The Examiner properly determined that a person of ordinary skill in the art would have found it obvious to employ Rath's teaching to prepare polyisobutenes in the presence of a trifluoride/secondary alcohol/dialkyl ether complex. (Ans. 4).

Appellant has not disputed the Examiner's findings. Rather, Appellant contends that Rath teaches the best results are achieved when the ether utilized contains at least one tertiary alkyl group. (App. Br. 4). Appellant contends Rath illustrates that the use of ethers which lack a tertiary alkyl group results in a significant deterioration of success in forming terminal vinylidene groups in the polyisobutenes. Appellant further argues that a person of ordinary skill in the art could not reasonably expect that a process which does not employ the tertiary ethers of Rath would yield the highly

reactive polyisobutenes referenced in the present claims. (App. Br. 7; Reply. Br. 2). Appellant further contends that the declaration of Hans-Peter Rath exemplifies unexpected results are achieved by the claimed invention. (App. Br. 6).

Appellant's arguments are not persuasive. Appellant's contentions focus on the examples of Rath and not the reference as a whole. Appellant has not disputed that Rath describes and suggests a process for preparing polyisobutene with a content of terminal vinylidene groups of more than 80 mol % and average molecular weight of 500-5000 by polymerizing isobutene in the presence of a complex comprising boron trifluoride, secondary alcohol, and dialkyl ether. A person of ordinary skill in the art would have reasonably expected that a complex comprising boron trifluoride, secondary alcohol, and dialkyl ether as disclosed by Rath would have been suitable for preparing polyisobutene with a content of terminal vinylidene groups of more than 80 mol %. Appellant has failed to explain why a person of ordinary skill in the art would have focused on the exemplified embodiments of the reference instead of the teachings of the reference as a whole.

Under the circumstances recounted above, it is our determination that the applied reference evidence establishes a prima facie case of obviousness within the meaning of 35 U.S.C. § 103. Because the Examiner has carried his burden of establishing a prima facie case of obviousness and because the Appellant has offered evidence of nonobviousness, we must now consider anew the issue of obviousness with due regard for all evidence relevant to the ultimate conclusion. *In re Rinehart*, 531 F.2d 1048, 1052 (CCPA 1976).

In support of the nonobviousness position, Appellant proffers a Declaration under 37 C.F.R. § 1.132 by Hans-Peter Rath, signed on January 1, 2003.³

According to Appellant, the Rath Declaration exemplifies that unexpected results are achieved by the claimed invention.⁴ (App. Br. 6; Reply Br. 3-4).

The Rath Declaration has been considered. However, the Declaration is not persuasive of non-obviousness. Neither Appellant nor the Declarant discusses or explains why the data presented in the Declaration supports the non-obviousness of the claimed subject matter. The burden is on Appellant to show why the comparative data establishes unexpected results. *See In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). Appellant has not shown why this comparison is believed to be with the closest prior art. *See In re Burckel*, 592 F.2d 1175, 1179 (CCPA 1979). Appellant must also explain why the showing is commensurate in scope with the claimed subject matter. *See In re Boesch*, 617 F.2d 272, 276 (CCPA 1980). These showings are especially relevant in this appeal where Rath discloses that polyisobutene with a content of terminal vinylidene groups of more than 80 mol % and average molecular weight of 500-5000 can be prepared by polymerizing with a complex comprising boron trifluoride, secondary alcohol, and dialkyl ethers. The comparative example in the Rath Declaration is limited to only one dialkyl ether, and the claims are not so limited. *See also In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990). Appellant has not explained why the

³ The inventor of the present application is the same as the Declarant.

⁴ It is noted that the first named inventor of the cited reference is the same as the Declarant.

percent reactivity of the Example described as representative of the claimed invention in the Rath Declaration which utilizes a di-sec-butyl ether is different from the percent reactivity of Example 8 of the Rath reference which utilizes a di-n-butyl ether.

Based on the totality of the record, including due consideration of Appellant's evidence and arguments, we determine that the preponderance of evidence weighs most heavily in favor of an obviousness determination for the claimed subject matter. Accordingly, we affirm the Examiner's decision to maintain the obviousness rejection over Rath for the reasons stated in the Answer and above.

Conclusions of Law

For the above stated reasons, Appellant has failed to show error in the Examiner's conclusion that the claimed subject matter would have been prima facie obviousness and have failed to present evidence of nonobviousness which outweighs the Examiner's reference evidence of obviousness.

Therefore, we sustain the § 103 rejection advanced by the Examiner in this appeal.

Order

We affirm the decision of the Examiner.

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No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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